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Set	Items	Description
S1	33	(MICROACOUSTIC? OR MICRO()ACOUSTIC?) (7N)ANALY?
S2	28	(MICROACOUSTI? OR MICRO()ACOUSTIC?) (5N)ANALYS?
S3	5	S1 NOT S2
?		

2/7/1 (Item 1 from file: 2)  
DIALOG(R)File 2:INSPEC  
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7347977 INSPEC Abstract Number: B2002-09-2575D-015, C2002-09-3260P-016  
**Title: A frequency addressable ultrasonic microfluidic actuator array**  
Author(s): Kaajakari, V.; Sathaye, A.; Lal, A.  
Author Affiliation: Dept. of Electr. & Comput. Eng., Wisconsin Univ.,  
Madison, WI, USA  
Conference Title: TRANSDUCERS '01. EUROSensors XV. 11th International  
Conference on Solid-State Sensors and Actuators. Digest of Technical Papers  
Part vol.2 p.958-61 vol.2  
Editor(s): Obermeier, E.  
Publisher: Springer-Verlag, Berlin, Germany  
Publication Date: 2001 Country of Publication: Germany 2 vol. 1807  
pp.  
ISBN: 3 540 42150 5 Material Identity Number: XX-2001-02052  
Conference Title: Proceedings of 11th International Conference on Solid  
State Sensors and Actuators Transducers '01/Eurosensors XV  
Conference Date: 10-14 June 2001 Conference Location: Munich, Germany  
Language: English Document Type: Conference Paper (PA)  
Treatment: Practical (P); Experimental (X)  
Abstract: In this paper, a microfluidic ultrasonic multi-actuator  
paradigm is introduced. Mixing, pumping, and particle capture are achieved  
by actuating polysilicon center-anchored circular plates and polysilicon  
sidewall cantilevers at ultrasonic frequencies using a single piezoelectric  
PZT (Lead Zirconate Titanate oxide) plate. Frequency addressability of  
acoustic streaming at surface microstructures is demonstrated by driving  
the bulk structure at the microstructure resonance frequencies. The  
actuator array is placed inside a microfluidic channel with a Reynold's  
number of approximately 0.1. Standing and rotating mode shapes of the  
polysilicon structures have been observed using an optical interferometer  
in the frequency range of 200 kHz to 10 MHz. Frequency dependent fluid  
motion was qualitatively deduced and experimentally verified using  
dimensional \*analysis\* of \*micro\*-acoustic-streaming. (12 Refs)  
Subfile: B C  
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2/7/2 (Item 2 from file: 2)  
DIALOG(R)File 2:INSPEC  
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6602032 INSPEC Abstract Number: B2000-07-2860C-002  
**Title: FFT-based \*analysis\* of periodic structures in \*microacoustic\*  
devices**  
Author(s): Jakoby, B.; Vellekoop, M.J.  
Author Affiliation: Lab. of Electron. Instrum./DIMES, Delft Univ. of  
Technol., Netherlands  
Journal: IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency  
Control vol.47, no.3 p.651-6  
Publisher: IEEE,  
Publication Date: May 2000 Country of Publication: USA  
CODEN: ITUCER ISSN: 0885-3010  
SICI: 0885-3010(200005)47:3L:651:BAPS;1-F  
Material Identity Number: J776-2000-003  
U.S. Copyright Clearance Center Code: 0885-3010/2000/\$10.00  
Language: English Document Type: Journal Paper (JP)  
Treatment: Theoretical (T)  
Abstract: Periodic structures utilized as transducer or reflector

elements play an important role in microacoustic wave devices. Such structures can be described using approximate analytical models. However, to obtain the accuracy required for reliable device simulation, numerical methods have to be employed. In this contribution, we present an efficient numerical approach to calculate the dispersion curves associated with microacoustic modes propagating in periodic structures; the method is demonstrated for the case of Love wave modes. The computational efficiency is related to the utilization of the FFT algorithm in a hybrid Method of Moments (MoM)/Mode-Matching analysis. From the obtained dispersion curves, characteristic parameters such as the stopband width can be obtained which can be used in a coupling-of-modes (COM) model of the structure. (14 Refs)

Subfile: B

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2/7/3 (Item 3 from file: 2)

DIALOG(R)File 2:INSPEC

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5991984 INSPEC Abstract Number: B9809-2860C-040

Title: Efficient \*analysis\* of periodic structures in \*microacoustic\* devices

Author(s): Jakoby, B.; Vellekoop, M.J.

Author Affiliation: Electron. Instrum. Lab., Delft Univ. of Technol., Netherlands

Conference Title: 1997 IEEE Ultrasonics Symposium Proceedings. An International Symposium (Cat. No.97CH36118) Part vol.1 p.113-17 vol.1

Editor(s): Schneider, S.C.; Levy, M.; McAvoy, B.R.

Publisher: IEEE, New York, NY, USA

Publication Date: 1997 Country of Publication: USA 2 vol. 1764 pp.

ISBN: 0 7803 4153 8 Material Identity Number: XX98-00691

U.S. Copyright Clearance Center Code: 0 7803 4153 8/97/\$10.00

Conference Title: 1997 IEEE Ultrasonics Symposium Proceedings An International Symposium

Conference Sponsor: IEEE Ultrasonics, Ferroelectr. & Frequency Control Soc

Conference Date: 5-8 Oct. 1997 Conference Location: Toronto, Ont., Canada

Language: English Document Type: Conference Paper (PA)

Treatment: Theoretical (T)

Abstract: Periodic structures utilized as transducer or reflector elements play an important role in microacoustic wave devices. Such structures can be described using approximate analytical models. However, to obtain the accuracy required for reliable device simulation, numerical methods have to be employed. In this contribution we present an efficient numerical approach to calculate the dispersion curves associated with microacoustic modes propagating in periodic structures. The computational efficiency is related to the utilization of the Fast Fourier Transform (FFT) algorithm in a hybrid Method of Moments (MoM)/Mode Matching analysis. From the obtained dispersion curves characteristic parameters such as the stopband width can be obtained which can be used in a coupling-of-modes model of the structure. (11 Refs)

Subfile: B

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2/7/4 (Item 4 from file: 2)

DIALOG(R)File 2:INSPEC

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01175928 INSPEC Abstract Number: A78032070

Title: Preliminary \*analysis\* of \*microacoustic\* signals associated with rock fracture

Author(s): Blacic, J.D.; Malone, S.D.

Author Affiliation: Geophys. Program, Univ. of Washington, Seattle, WA, USA

Journal: Geophysical Research Letters vol.4, no.10 p.477-80

Publication Date: Oct. 1977 Country of Publication: USA

CODEN: GPRLAJ ISSN: 0094-8276

Language: English Document Type: Journal Paper (JP)

Treatment: Experimental (X)

Abstract: A new experimental rock deformation system utilizing a piston-cylinder apparatus allows recording of microacoustic signals associated with rock failure with great accuracy over a bandwidth of DC-4 MHz. A calibrated response makes possible the measurement of dynamic seismic parameters which may be compared with those predicted by theory. Preliminary analysis of two events generated during brittle shear failure of granite suggests that the strain drop of approximately  $1 \times 10^{-4}$  is similar to that of large earthquakes. A seismic moment of  $10^6$  dyn-cm and corner frequency of 600 kHz are consistent, in a general way, with those expected from theory. (11 Refs)

Subfile: A

2/7/5 (Item 1 from file: 6)

DIALOG(R)File 6:NTIS

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0088442 NTIS Accession Number: AD-612 094/XAB

**\*Microacoustic\* System \*Analysis\* by the Measurement of Free-Field Sound Speed**

(Interim rept)

Neubauer, W. G. ; Dragonette, L. R.

Naval Research Lab Washington D C

Corp. Source Codes: 888888888

Report No.: NRL-6113

3 Aug 64 2p

Journal Announcement: USGRDR6508

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An \*analysis\* of the \*microacoustic\* system was undertaken by means of the measurement of free-field sound speed in water. The water was contained in a 10x5x5 ft cypress tank. A pulse was transmitted from a fixed source to a receiver which was positioned at two different distances along a radius of the source. The distance difference of approximately one meter and the travel time over this distance were accurately measured. Soundspeed measurements were taken at 41 temperatures over a range from 16.8 to 23.10C. A 290-degree spherical cap was used as the fixed source. The movable receiver was a disk transducer whose active element radius was 0.16 lamda at the source resonant frequency of approximately 200 kc. Measurements were also obtained by using 0.63-cm radius disks as source and receiver with the same results. The experimental measurements led to the detection of a large error which exists in the remote determination of large distances using a cathetometer mounted horizontally. This error was eliminated and evaluated by moving along an accurately calibrated bar, allowing distance to be measured directly. Subsequently, a new system was designed which will allow the remote determination of distances accurate to within  $\pm 0.001$  cm. It was found that the ambient temperature at a given

depth in the tank remained constant to within  $\pm 0.01^\circ\text{C}$ . for a time sufficient to make the required measurements and that vertical temperature gradients were not present to a significant degree. The free-field value of velocity was determined to be at least 0.2 to 0.6 m/sec lower than confined field values measured by others. (Author)

2/7/6 (Item 1 from file: 8)  
DIALOG(R)File 8:EI Compendex(R)  
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03069581 E.I. Monthly No: EI9106072031

Title: Seepage investigation.  
Author: Nickels, Ken; Grant, Steve; Christensen, Dick  
Corporate Source: EWI Engineering Associates, Madison, WI, USA  
Source: Water/Engineering and Management v 138 n 1 Jan 1991 p 16-17  
Publication Year: 1991  
CODEN: WENMD2 ISSN: 0273-2238  
Language: English  
Document Type: JA; (Journal Article) Treatment: A; (Applications); X; (Experimental)  
Journal Announcement: 9106

Abstract: For 16 years the residents along Lake Carroll's shoreline in Lake Carroll, Ill., have put up with low water levels due to lake leakage. While attempts had been made over the years to pinpoint the source of lake leakage, progress was slow until a recent effort used a combination of detection approaches including water balance modeling, self-potential surveying, \*microacoustic\* detection and dye-tracer \*analysis\*. Each of these techniques, in isolation, has been used in other settings to detect water leaks. In the case of Lake Carroll, however, the combination of techniques to localize the source of exfiltration and confirm results constituted an accurate and cost-effective strategy.

2/7/7 (Item 1 from file: 25)  
DIALOG(R)File 25:Weldasearch  
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00076132 040979

NONDESTRUCTIVE TESTING BY 'ANALYSIS OF ACOUSTIC EMISSIONS'.

PARRY D L

REVISTA DE SOLDADURA, VOL 3, NO 1. JAN-MAR 19 73. PP.17-27.8 FIG., 2 TABLES.

DOCUMENT TYPE: Books and other publications

LANGUAGE: Spanish RECORD TYPE: Abstract

EQUIPMENT FOR THE DETECTION AND ANALYSIS OF ACOUSTIC EMISSIONS IS BRIEFLY DESCRIBED, AND ITS OPERATION EXPLAINED. IN THIS TYPE OF TEST, USE IS MADE OF \*MICROACOUSTIC\* WAVES GENERATED UNDER STRESS TO \*ANALYSE\* THE PHYSICAL INTEGRITY OF STRUCTURES, OR TO SPOT LEAKS IN PRESSURISED SYSTEMS. THREE TYPICAL EXAMPLES ARE GIVEN OF EFFECTIVE USE OF THIS METHOD FOR NONDESTRUCTIVE TESTING OF A CHEMICAL VESSEL, A HEAT EXCHANGER, AND AN UNDERGROUND PIPELINE. IT MAY BE APPLIED TO MATERIALS AS DIVERSE AS METALS AND WOOD, AND TO STRUCTURES AS DIFFERENT AS LABORATORY TESTPIECES AND THE PRESSURE SYSTEMS OF LARGE NUCLEAR PLANTS.

2/7/8 (Item 2 from file: 25)  
DIALOG(R)File 25:Weldasearch  
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00067825 031246



FIELD EVALUATION OF HEAVY-WALLED PRESSURE VESSELS USING ACOUSTIC EMISSION ANALYSIS.

WAITE E V; PARRY D L

MATER. EVAL., JUNE 1971, 29, (6), 117-124.

MATER. EVAL.

PUBLICATION DATE: 19710000 DOCUMENT TYPE: Journal

LANGUAGE: English RECORD TYPE: Abstract

A PORTABLE ACOUSTIC ANALYSIS SYSTEM WAS DEVELOPED WHICH DETECTS, LOCATES AND \*ANALYSES\* \*MICROACOUSTIC\* ENERGY EMISSIONS ORIGINATING FROM FLAWS OR CRACKS WITHIN A STRESSED STRUCTURE. TH AID IN THE DEVELOPMENT AND EVALUATION OF THE ACOUSTIC SYSTEM. ACOUSTIC-EMISSION DATA WERE OBTAINED AND ON-SITE ANALYSES MADE OF THE INTEGRITY OF SEVERAL LARGE INDUSTRIAL CHEMICAL-REACTOR PRESSURE VESSELS IN CONJUNCTION WITH THE HYDROSTATIC-ACCEPTANCE TESTING OF THE VESSELS. THE SYSTEM WAS SHOWN TO BE CAPABLE OF DETECTING AND LOCATING ACOUSTIC-EMISSION SITES (FLAWS) AS SMALL AS 0.1 IN. (2.54 MM) IN SIZE WITH ACOUSTIC-SIGNAL TRANSMISSION DISTANCE OF UP TO 60 FT (18.28 M) FROM THE EMISSION SITE TO THE DETECTOR IN C STEELS.

2/7/9 (Item 1 from file: 95)

DIALOG(R)File 95:TEME-Technology & Management

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01416977 20000600166

**Ein Magnitudenmass fuer Schallemissionsanalyse und Mikroakustik**

(A magnitude unit for acoustic \*analysis\* and \*micro\* \*acoustic\*)

Eisenblaetter, J; Spies, T

Gesellschaft fuer Materialpruefung und Geophysik, Ober-Moerlen, D.;

Bundesanstalt fuer Geowissenschaften und Rohstoffe, Hannover, D

Statusberichte zur Entwicklung und Anwendung der Schallemissionsanalyse.

Vortraege und Plakatbeitraege. 12. Kolloquium Schallemission, Deutsche Ges.

fuer Zerstoeerungsfreie Pruefung (DGZfP), Jena, D, 23.-24. Mar, 20002000

Document type: Conference paper Language: German

Record type: Abstract

ISBN: 3-931381-31-5

ABSTRACT:

Als Mass fuer die Staerke eines Schallemissionssignals wird im Allgemeinen die Maximalamplitude herangezogen. Die Staerke eines Schallemissionsereignisses laesst sich allerdings mit dieser Messgroesse nur dann hinreichend charakterisieren, falls die Quellen der zu vergleichenden Ereignisse vom Aufnehmer aehnlichen Abstand haben. Bei Messungen mit mehreren Aufnehmern, bei denen die Quellen geortet werden, ist deshalb eine auf einen bestimmten Abstand bezogene Messgroesse angebracht. Bei unseren mikroakustischen Messungen in Salzbergwerken wird dieser Bezug auf einen festen Abstand in einer Ausgleichsrechnung hergestellt, wobei als Eingangsgroessen die Maximalamplituden an den Messkanaelen und die Abstaende der Schallquelle von den Aufnehmern dienen. Wir gehen hierbei von einer Gesetzmassigkeit fuer die abstandsabhaengige Schallschwaechung aus, welche geometrische Divergenz und Schwaechung durch Absorption und Streuung beruecksichtigt. Den Funktionswert der Ausgleichskurve bei 50 m bezeichnen wir als Magnitude. Im zweiten Teil dieses Beitrags wird gezeigt, dass bei Einsetzen der (elektrischen) Energie der Signale an Stelle der Maximalamplituden in den selben Rechengang ein Mass fuer die Ereignisenergie resultiert, fuer das - bei Kenntnis der absoluten Empfindlichkeit der Aufnehmer (z.B. aus einer Reziprozitaetskalibrierung) - auch die absolute seismische Energie des Ereignisses angegeben werden kann. Die gefundenen Groessenordnungen der seismischen Energien werden mit bekannten Ergebnissen mikroseismischer Messungen im Steinsalz verglichen.

2/7/10 (Item 1 from file: 144)  
DIALOG(R)File 144:Pascal  
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12529883 PASCAL No.: 96-0204696

Analyse et modelisation des performances de capteurs microacoustiques  
specifiques adaptees a l'adherence de couches minces sur substrat  
(\*Analysis\* and modelization of specific \*microacoustic\* sensor  
performances matched to the adhesion of thin films on substrate)

MAUREL Celine; ATTAL J, dir

Universite de Montpellier 2, Montpellier, Francee

Univ.: Universite de Montpellier 2. Montpellier. FRA Degree: Th. doct.

1995-12; 1995 167 p.

Availability: INIST-T 102428; T95MON20199

No. of Refs.: 84 ref.

Document Type: T (Thesis) ; M (Monographic)

Country of Publication: France

Language: French Summary Language: French; English

L'etude a eu pour objectif de developper les applications de la  
microscopie acoustique a la caracterisation de la tenue mecanique d'une  
couche mince deposee sur un substrat. Une partie consacree a la  
modelisation expose les differentes formulations de l'adhesion et permet la  
determination du reseau de dispersion des vitesses des modes de Lamb pour  
chaque degre d'adherence. Cette analyse est mise en oeuvre  
experimentalement sur des plaques d'acier liees a un substrat en verre. La  
definition de criteres permettant d'evaluer l'efficacite de ces modes est  
developpee et appliquee a l'etude de leur sensibilite au decollement.  
L'optimisation des performances du capteur est etudiee par l'intermediaire  
de la longueur de la ligne a retard. Nous montrons, au niveau theorique et  
experimental, que ce parametre permet d'ameliorer la sensibilite de la  
signature acoustique aux modes de propagation acoustiques. Au niveau  
experimental, la caracterisation d'un depot PVD de chrome de 10 microns  
d'epaisseur sur un substrat en acier est abordee sous deux aspects. D'une  
part, l'imagerie hautes frequences permet d'observer sa microstructure et  
de detecter les defauts masques (fissures,). D'autre part, l'analyse de  
signatures acoustiques  $V(z)$  et de profils  $V(x)$  permet d'effectuer une  
quantification de la qualite du revetement

?

3/7/1 (Item 1 from file: 2)  
DIALOG(R)File 2:INSPEC  
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00297222 INSPEC Abstract Number: A71060113

Title: **Field evaluation of heavy-walled pressure vessels using acoustic emission analysis**

Author(s): Waite, E.V.; Parry, D.L.

Author Affiliation: Idaho Nuclear Corp., Idaho Falls, ID, USA

Journal: Materials Evaluation vol.29, no.6 p.117-24

Publication Date: June 1971 Country of Publication: USA

CODEN: MAEVAD ISSN: 0025-5327

Language: English Document Type: Journal Paper (JP)

Treatment: Practical (P)

Abstract: A portable acoustic analysis system has been developed by Idaho Nuclear Corporation (INC) which detects, locates and \*analyzes\* \*microacoustic\* energy emissions originating from flaws or cracks within a stressed structure. The system was developed for the US Atomic Energy Commission for potential use as a nondestructive test technique for the safety assessment of pressure retention envelopes of nuclear power reactors. To aid in the development and evaluation of the acoustic system, acoustic emission data were obtained and on-site analyses made of the integrity of several large industrial chemical reactor pressure vessels in conjunction with the hydrostatic acceptance testing of the vessels. The system was shown to be capable of detecting and locating acoustic emission sites (flaws) as small as 0.1 in. (2.54 mm) in size with acoustic signal transmission distance of up to 60 ft (18.28 m) from the emission site to the detector.

Subfile: A

3/7/2 (Item 1 from file: 8)  
DIALOG(R)File 8:EI Compendex(R)  
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03793278 E.I. No: EIP94011192034

Title: **Rigorous modeling of corrugated surfaces in microacoustics**

Author: Baghai-Wadji, A.R.; Maradudin, A.A.

Corporate Source: Vienna Univ of Technology, Vienna, Austria

Conference Title: Proceedings of the 47th IEEE Annual International Frequency Control Symposium

Conference Location: Salt Lake City, UT, USA Conference Date: 19930602-19930604

Sponsor: IEEE

E.I. Conference No.: 19580

Source: Proceedings of the Annual Frequency Control Symposium 1993. Publ by IEEE, IEEE Service Center, Piscataway, NJ, USA, (IEEE cat n 93CH3244-1). p 514-522

Publication Year: 1993

CODEN: JOURNAL ISSN: 0161-6404 ISBN: 0-7803-0905-7

Language: English

Document Type: CA; (Conference Article) Treatment: T; (Theoretical)

Journal Announcement: 9403W3

Abstract: In the \*analysis\* and design of crystal oscillators and \*microacoustic\* resonators, an accurate characterization of the wave propagation along periodically loaded surfaces is needed. It is a known fact that the nature of the surface loading can be electrical or mechanical or a combination of both. However, the majority of approaches presented so far consider only the effects of the electrical loading. In this paper will be present a boundary-element-formulation of the massloading effects in

surface acoustic wave oscillators and resonators. The method of analysis is based on the concept of periodic Green's functions and the method of weighted residuals. A numerically calculated dispersion curve associated with a surface transverse wave in a periodic structure will also be presented. (Author abstract) 4 Refs.

3/7/3 (Item 2 from file: 8)  
DIALOG(R)File 8:EI Compendex(R)  
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00184735 E.I. Monthly No: EI71X172663

Title: Field evaluation of heavy-walled pressure vessels using acoustic emission analysis.

Author: WAITE, E. V.; PARRY, D. L.

Corporate Source: Idaho Nuclear Corp, Idaho Falls

Source: Materials Evaluation v 29 n 6 June 1971 p 117-24

Publication Year: 1971

CODEN: MAEVA ISSN: 0025-5327

Language: ENGLISH

Journal Announcement: 71X1

Abstract: A portable acoustic analysis system has been developed by Idaho Nuclear Corp (INC) which detects, locates and \*analyzes\* \*microacoustic\* energy emissions originating from flaws or cracks within a stressed structure. System is used as a nondestructive test technique for the safety assessment of pressure retention envelopes of nuclear power reactors. 3 refs.

3/7/4 (Item 1 from file: 65)  
DIALOG(R)File 65:Inside Conferences  
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02723363 INSIDE CONFERENCE ITEM ID: CN028348207

Field Theory \*Analysis\* and Experimental Characterization of Wave Propagation in \*Microacoustic\* Structures

Weigel, R.; Holm, A.; Meier, H.; Roesler, U.

CONFERENCE: Progress in electromagnetics research-Symposium

PROGRESS IN ELECTROMAGNETICS RESEARCH SYMPOSIUM, 1997; VOL 1 P: 95

Hong Kong, City Univ of Hong Kong, 1997

ISBN: 9624420971

LANGUAGE: English DOCUMENT TYPE: Conference Extended abstracts

CONFERENCE SPONSOR: City University Hong Kong Telecommunications Research Centre

CONFERENCE LOCATION: Hong Kong

CONFERENCE DATE: Jan 1997 (199701) (199701)

NOTE:

See also 4542.4293 vol 11 no 6 1997 for selected papers

3/7/5 (Item 2 from file: 65)  
DIALOG(R)File 65:Inside Conferences  
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02715761 INSIDE CONFERENCE ITEM ID: CN028272188

Field Theory \*Analysis\* and Experimental Characterization of Wave Propagation in \*Microacoustic\* Structures

Weigel, R.; Holm, A.; Meier, H.; Roesler, U.

CONFERENCE: Progress in electromagnetics research-Symposium

PROGRESS IN ELECTROMAGNETICS RESEARCH SYMPOSIUM, 1997; VOL 1 P: 95

Hong Kong, City Univ of Hong Kong, 1997

ISBN: 9624420971

LANGUAGE: English DOCUMENT TYPE: Conference Extended abstracts

CONFERENCE SPONSOR: City University Hong Kong Telecommunications  
Research Centre

CONFERENCE LOCATION: Hong Kong

CONFERENCE DATE: Jan 1997 (199701) (199701)

NOTE:

See also 4542.4293 vol 11 no 6 1997 for selected papers

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/7/1 (Item 1 from file: 2)

DIALOG(R)File 2:INSPEC

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00297222 INSPEC Abstract Number: A71060113

**Title: Field evaluation of heavy-walled pressure vessels using acoustic emission analysis**

Author(s): Waite, E.V.; Parry, D.L.

Author Affiliation: Idaho Nuclear Corp., Idaho Falls, ID, USA

Journal: Materials Evaluation vol.29, no.6 p.117-24

Publication Date: June 1971 Country of Publication: USA

CODEN: MAEVAD ISSN: 0025-5327

Language: English Document Type: Journal Paper (JP)

Treatment: Practical (P)

Abstract: A portable acoustic analysis system has been developed by Idaho Nuclear Corporation (INC) which detects, locates and \*analyzes\* \*microacoustic\* energy emissions originating from flaws or cracks within a stressed structure. The system was developed for the US Atomic Energy Commission for potential use as a nondestructive test technique for the safety assessment of pressure retention envelopes of nuclear power reactors. To aid in the development and evaluation of the acoustic system, acoustic emission data were obtained and on-site analyses made of the integrity of several large industrial chemical reactor pressure vessels in conjunction with the hydrostatic acceptance testing of the vessels. The system was shown to be capable of detecting and locating acoustic emission sites (flaws) as small as 0.1 in. (2.54 mm) in size with acoustic signal transmission distance of up to 60 ft (18.28 m) from the emission site to the detector.

Subfile: A

3/7/2 (Item 1 from file: 8)

DIALOG(R)File 8:Ei Compendex(R)

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03793278 E.I. No: EIP94011192034

**Title: Rigorous modeling of corrugated surfaces in microacoustics**

Author: Baghai-Wadji, A.R.; Maradudin, A.A.

Corporate Source: Vienna Univ of Technology, Vienna, Austria

Conference Title: Proceedings of the 47th IEEE Annual International Frequency Control Symposium

Conference Location: Salt Lake City, UT, USA Conference Date: 19930602-19930604

Sponsor: IEEE

E.I. Conference No.: 19580

Source: Proceedings of the Annual Frequency Control Symposium 1993. Publ by IEEE, IEEE Service Center, Piscataway, NJ, USA, (IEEE cat n 93CH3244-1). p 514-522

Publication Year: 1993

CODEN: JOURNAL ISSN: 0161-6404 ISBN: 0-7803-0905-7

Language: English

Document Type: CA; (Conference Article) Treatment: T; (Theoretical)

Journal Announcement: 9403W3

Abstract: In the \*analysis\* and design of crystal oscillators and \*microacoustic\* resonators, an accurate characterization of the wave propagation along periodically loaded surfaces is needed. It is a known fact that the nature of the surface loading can be electrical or mechanical or a combination of both. However, the majority of approaches presented so far consider only the effects of the electrical loading. In this paper will be present a boundary-element-formulation of the massloading effects in surface acoustic wave oscillators and resonators. The method of analysis is

based on the concept of periodic Green's functions and the method of weighted residuals. A numerically calculated dispersion curve associated with a surface transverse wave in a periodic structure will also be presented. (Author abstract) 4 Refs.

3/7/3 (Item 2 from file: 8)  
DIALOG(R)File 8:EI Compendex(R)  
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00184735 E.I. Monthly No: EI71X172663

**Title: Field evaluation of heavy-walled pressure vessels using acoustic emission analysis.**

Author: WAITE, E. V.; PARRY, D. L.

Corporate Source: Idaho Nuclear Corp, Idaho Falls

Source: Materials Evaluation v 29 n 6 June 1971 p 117-24

Publication Year: 1971

CODEN: MAEVA ISSN: 0025-5327

Language: ENGLISH

Journal Announcement: 71X1

Abstract: A portable acoustic analysis system has been developed by Idaho Nuclear Corp (INC) which detects, locates and \*analyzes\* \*microacoustic\* energy emissions originating from flaws or cracks within a stressed structure. System is used as a nondestructive test technique for the safety assessment of pressure retention envelopes of nuclear power reactors. 3 refs.

3/7/4 (Item 1 from file: 65)  
DIALOG(R)File 65:Inside Conferences  
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02723363 INSIDE CONFERENCE ITEM ID: CN028348207

**Field Theory \*Analysis\* and Experimental Characterization of Wave Propagation in \*Microacoustic\* Structures**

Weigel, R.; Holm, A.; Meier, H.; Roesler, U.

CONFERENCE: Progress in electromagnetics research-Symposium

PROGRESS IN ELECTROMAGNETICS RESEARCH SYMPOSIUM, 1997; VOL 1 P: 95

Hong Kong, City Univ of Hong Kong, 1997

ISBN: 9624420971

LANGUAGE: English DOCUMENT TYPE: Conference Extended abstracts

CONFERENCE SPONSOR: City University Hong Kong Telecommunications Research Centre

CONFERENCE LOCATION: Hong Kong

CONFERENCE DATE: Jan 1997 (199701) (199701)

NOTE:

See also 4542.4293 vol 11 no 6 1997 for selected papers

3/7/5 (Item 2 from file: 65)  
DIALOG(R)File 65:Inside Conferences  
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02715761 INSIDE CONFERENCE ITEM ID: CN028272188

**Field Theory \*Analysis\* and Experimental Characterization of Wave Propagation in \*Microacoustic\* Structures**

Weigel, R.; Holm, A.; Meier, H.; Roesler, U.

CONFERENCE: Progress in electromagnetics research-Symposium

PROGRESS IN ELECTROMAGNETICS RESEARCH SYMPOSIUM, 1997; VOL 1 P: 95

Hong Kong, City Univ of Hong Kong, 1997

show files;ds  
File 2:INSPEC 1969-2004/Feb W2  
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Set	Items	Description
S1	6647	MICROSENSORS?/DE
S2	8	S1 AND SPECTRUM(5N)ANALY?
?		



2/7/1

DIALOG(R)File 2:INSPEC

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7389888 INSPEC Abstract Number: A2002-21-8280T-012, B2002-11-7230L-006

**Title: Development of micro-**\*\*spectrum\*\*** **\*\*analyzing\*\*** devices: applications to carbon dioxide sensor**

Author(s): Hitoshi, H.; Kishi, N.; Iwaoka, H.

Author Affiliation: Yokogawa Electr. Corp., Japan

Journal: Transactions of the Institute of Electrical Engineers of Japan, Part E vol.122-E, no.5 p.274-9

Publisher: Inst. Electr. Eng. Japan,

Publication Date: May 2002 Country of Publication: Japan

CODEN: DGMEM9 ISSN: 1341-8939

SICI: 1341-8939(200205)122/E:5L:274:DMSA;1-M

Material Identity Number: F143-2002-005

Language: Japanese Document Type: Journal Paper (JP)

Treatment: Applications (A); Experimental (X)

Abstract: We have developed an infrared detector and a micro variable infrared filter for micro-**\*\*spectrum\*\*** **\*\*analyzing\*\*** devices. Two infrared detectors and the infrared filter were mounted on an identical package. A micro-**\*\*spectrum\*\*** **\*\*analyzing\*\*** device of 1 cm<sup>3</sup>/volume as the two wavelength NDIR system for combining these elements with the infrared source was able to measure the concentration of carbon dioxide. (11 Refs)

Subfile: A B

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DIALOG(R)File 2:INSPEC

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7188378 INSPEC Abstract Number: A2002-07-0710C-003, B2002-03-7230M-018, C2002-03-7410H-030

**Title: Characterizing tuning forks as nanomechanics sensors through thermal noise spectra measured by a personal computer sound card**

Author(s): Mariani, T.; Lenci, L.; Petracchi, D.; Ascoli, C.

Author Affiliation: Ist. di Biofisica, CNR, Pisa, Italy

Journal: Measurement Science & Technology vol.13, no.1 p.28-32

Publisher: IOP Publishing,

Publication Date: Jan. 2002 Country of Publication: UK

CODEN: MSTCEP ISSN: 0957-0233

SICI: 0957-0233(200201)13:1L:28:CTFN;1-P

Material Identity Number: N647-2002-001

U.S. Copyright Clearance Center Code: 0957-0233/02/010028+05\$30.00

Document Number: S0957-0233(02)26410-3

Language: English Document Type: Journal Paper (JP)

Treatment: Experimental (X)

Abstract: A minimal and convenient experimental set-up is described, which allows an easy characterization of crystal tuning forks, especially after the modifications introduced to exploit them as sensors in nanomechanics and in force microscopy techniques. The system uses the thermal noise of the crystal as test signal, a simple frequency converter for translating the signal itself into the audio-frequency band, and a PC sound card to acquire it and eventually perform a fast Fourier transform **\*\*spectrum\*\*** **\*\*analysis\*\*** on the noise samples. Our results show that the main decrease of the Q-factor of the tuning fork is caused by its acoustical coupling to the environment, while small masses added to either or both prongs only produce minor variations. (15 Refs)

Subfile: A B C

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DIALOG(R)File 2:INSPEC

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7115708 INSPEC Abstract Number: A2002-02-8760B-009, B2002-01-7510H-017

**Title: Micromachined muscle cell analysis chip**

Author(s): Weijie Wang; Li, P.C.H.; Parameswaran, A.M.

Author Affiliation: Dept. of Chem., Simon Fraser Univ., Burnaby, BC, Canada

Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.4230 p.100-8

Publisher: SPIE-Int. Soc. Opt. Eng,

Publication Date: 2000 Country of Publication: USA

CODEN: PSISDG ISSN: 0277-786X

SICI: 0277-786X(2000)4230L:100:MMCA;1-6

Material Identity Number: C574-2001-084

U.S. Copyright Clearance Center Code: 0277-786X/00/\$15.00

Conference Title: Micromachining and Microfabrication

Conference Sponsor: SPIE; Nanyang Technol. Univ

Conference Date: 28-30 Nov. 2000 Conference Location: Singapore

Language: English Document Type: Conference Paper (PA); Journal Paper (JP)

Treatment: Applications (A); Practical (P); Experimental (X)

Abstract: Reports the fabrication of a microfluidic biochip integrated with an acoustic wave sensor that can be used to characterize the contraction of single cardiac (heart) muscle cells. The work will lead to rapid analysis of single muscle cells in response to various drugs by determining changes in mass and viscoelastic properties during cell contraction and relaxation. The microfabricated device is a combination of a top cover plate which is a glass substrate containing etched channels and a bottom plate which is an AT-cut quartz crystal with excitation electrodes. The glass plate is micromachined with a network of channels and chambers, which is intended for delivery of fluids, selection and retention of single muscle cells. The bottom plate (quartz crystal) comprises all the patterned electrodes for acoustic wave launching and detection. The quartz plate is operated in the thickness-shear acoustic wave mode. In preliminary tests, myocytes (muscle cells) were introduced into the fluidic channels through a drilled hole. A cardiac muscle cell was monitored optically using a microscope while the cell was stimulated to contract and relax by a high calcium ion concentration (bath solution). Using the impedance mode of a network/\*\*spectrum\*\* \*\*analyzer\*\*, various parameters of the AT-cut quartz crystal, which include resonant frequencies, frequencies at minimum and maximum impedance, and equivalent circuit parameters, were continuously monitored. This paper describes the device fabrication, experimental setup, procedure, and some preliminary results of the impedance analysis. (10 Refs)

Subfile: A B

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DIALOG(R)File 2:INSPEC

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6588719 INSPEC Abstract Number: A2000-12-0710C-004, B2000-06-2575D-050

**Title: Analytical modelling for accelerometers with electrically tunable sensitivity**

Author(s): Cretu, E.; Bartek, M.; Wolffenbuttel, R.F.  
Author Affiliation: Dept. of Electr. Eng., Delft Univ. of Technol.,  
Netherlands

Conference Title: 1999 International Conference on Modeling and  
Simulation of Microsystems p.601-4

Publisher: Computational Publications, Cambridge, MA, USA

Publication Date: 1999 Country of Publication: USA xviii+690 pp.

ISBN: 0 9666135 4 6 Material Identity Number: XX-1999-00128

Conference Title: Proceedings of International Conference on Modelling  
and Simulation of Microsystems, Semiconductors, Sensors and Actuators

Conference Sponsor: Integrated Syst. Eng.; IntelliSense Corp.; MEMSCAP  
S.A.; Mentor Graphics Corp.; Microcosm Technol. Inc.; Molecular Simulations  
Inc

Conference Date: 19-21 April 1999 Conference Location: San Juan,  
Puerto Rico

Language: English Document Type: Conference Paper (PA)

Treatment: Practical (P); Theoretical (T)

Abstract: Results of the analysis and modelling of a pendulum type of  
accelerometer in an electrostatic field are presented. A common-mode  
voltage is used to yield an electrostatic positive feedback that amplifies  
the mechanical sensitivity. The externally applied electrostatic field  
enables the tuning of both sensitivity and spectral selectivity. The  
electromechanical coupling is analyzed both analytically and numerically,  
in terms of electrostatic shear forces and bending momenta. The results are  
used to design and fabricate accelerometers for mechanical **\*\*spectrum\*\***  
**\*\*analysis\*\***. (2 Refs)

Subfile: A B

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DIALOG(R)File 2:INSPEC

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6483566 INSPEC Abstract Number: B2000-03-7230-015

**Title: Wireless integrated network sensors: low power systems on a chip**

Author(s): Asada, G.; Dong, M.; Lin, T.S.; Newberg, F.; Pottie, G.;  
Kaiser, W.J.; Marcy, H.O.

Author Affiliation: California Univ., Los Angeles, CA, USA

Conference Title: ESSCIRC '98. Proceedings of the 24th European  
Solid-State Circuits Conference p.9-16

Editor(s): Huijsing, J.H.; van Roermund, A.H.M.; Grunbacher, H.

Publisher: Editions Frontieres, Paris, France

Publication Date: 1998 Country of Publication: France xii+514 pp.

ISBN: 2 86332 235 4 Material Identity Number: XX-1999-03625

Conference Title: ESSCIRC '98. Proceedings of the 24th European  
Solid-State Circuits Conference

Conference Date: 22-24 Sept. 1998 Conference Location: The Hague,  
Netherlands

Language: English Document Type: Conference Paper (PA)

Treatment: Practical (P)

Abstract: Wireless integrated network sensors (WINS) now provide a new  
monitoring and control capability for transportation, manufacturing, health  
care, environmental monitoring, and safety and security. WINS combine  
sensing, signal processing, decision capability, and wireless networking  
capability in a compact, low power system. WINS systems combine microsensor  
technology with low power sensor interface, signal processing, and RF  
communication circuits. The need for low cost presents engineering  
challenges for implementation of these systems in conventional digital CMOS  
technology. This paper describes micropower data converter, digital signal  
processing systems, and weak inversion CMOS RF circuits. The digital signal

processing system relies on a continuously operating **\*\*spectrum\*\***  
**\*\*analyzer\*\***. Finally, the weak inversion CMOS RF systems are designed to  
exploit the properties of high-Q inductors to enable low power operation.  
This paper reviews system architecture and low power circuits for WINS. (8  
Refs)

Subfile: B

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DIALOG(R)File 2:INSPEC

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6301362 INSPEC Abstract Number: A1999-17-4282-001, B1999-09-4140-001

**Title: Micromachined pressure sensor integrated with an imbalanced  
Mach-Zehnder waveguide on silicon for coherence modulation scheme**

Author(s): Porte, H.; Gorel, V.; Goedgebuer, J.-P.

Author Affiliation: Lab. d'Opt. P.M. Duffieux, Univ. de Franche-Comte,  
Besancon, France

Journal: Proceedings of the SPIE - The International Society for Optical  
Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA)

vol.3555 p.194-201

Publisher: SPIE-Int. Soc. Opt. Eng,

Publication Date: 1998 Country of Publication: USA

CODEN: PSISDG ISSN: 0277-786X

SICI: 0277-786X(1998)3555L:194:MPSI;1-4

Material Identity Number: C574-1998-196

U.S. Copyright Clearance Center Code: 0277-786X/98/\$10.00

Conference Title: Optical and Fiber Optic Sensor Systems

Conference Sponsor: SPIE: Chinese Opt. Soc.; China Opt. & Optoelectron.  
Manuf. Assoc

Conference Date: 16-19 Sept. 1998 Conference Location: Beijing, China

Language: English Document Type: Conference Paper (PA); Journal Paper  
(JP)

Treatment: Theoretical (T); Experimental (X)

Abstract: We investigate theoretically and experimentally the principle  
of a micromachined pressure sensor integrated on silicon. The optical part  
of the sensor consists of an imbalanced Mach-Zehnder waveguide  
interferometer. The waveguide is formed by a silicon nitride layer of high  
refractive index set between two cladding layers of silicon dioxide of  
lower refractive index. The sensing part of the device consists in a set of  
membranes obtained by anisotropic etching of the back face of the substrate  
under the reference arm. The pressure variations applied to the membrane  
induce a geometrical deformation of the waveguide arm and modify the  
optical path difference between the arms. The nonlinear variation of the  
phase versus the applied pressure is obtained from the spectral  
**\*\*analysis\*\*** of the channeled **\*\*spectrum\*\*** transmitted by the  
interferometer. The static optical path-delay introduced between the arms  
allows the sensor to be introduced in a coherence modulation scheme, which  
can result in a remote sensor system, involving an active demodulation. (12  
Refs)

Subfile: A B

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DIALOG(R)File 2:INSPEC

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5745250 INSPEC Abstract Number: B9712-7230-077, C9712-3240D-001

**Title: Low power signal processing architectures for network microsensors**

Author(s): Dong, M.J.; Yung, K.G.; Kaiser, W.J.  
 Author Affiliation: California Univ., Los Angeles, CA, USA  
 Conference Title: Proceedings 1997 International Symposium on Low Power  
 Electronics and Design (IEEE Cat. No.97TH8332) p.173-7  
 Publisher: ACM, New York, NY, USA  
 Publication Date: 1997 Country of Publication: USA x+335 pp.  
 ISBN: 0 89791 903 3 Material Identity Number: XX97-02049  
 U.S. Copyright Clearance Center Code: 0 89791 903 3/97/08..\$3.50  
 Conference Title: Proceedings of 1997 International Symposium on Low  
 Power Electronics and Design  
 Conference Sponsor: ACM SIGDA; IEEE Circuits & Syst. Soc  
 Conference Date: 18-20 Aug. 1997 Conference Location: Monterey, CA,  
 USA  
 Language: English Document Type: Conference Paper (PA)  
 Treatment: Applications (A); Practical (P); Experimental (X)  
 Abstract: Low power signal processing systems are required for  
 distributed network microsensor technology. Network microsensors now  
 provide a new monitoring and control capability for civil and military  
 applications in transportation, manufacturing, biomedical technology,  
 environmental management, and safety and security systems. Signal  
 processing methods for event detection have been developed with low power,  
 parallel architectures that optimize performance for unique sensor system  
 requirements. Implementation of parallel datapaths with shared arithmetic  
 elements enables high throughput at low clock rate. This method has been  
 used to implement a microsensor **\*\*spectrum\*\*** **\*\*analyzer\*\*** for a 200  
 sample/s measurement system. This 0.8  $\mu$  CMOS device operates with a 1  $\mu$  A  
 drain current at a 3 V supply bias. (4 Refs)  
 Subfile: B C  
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2/7/8  
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5476973 INSPEC Abstract Number: A9704-8280T-009, B9702-7230L-018  
**Title: Remote sensing of tetrachloroethene with a micro-fibre optical gas  
 sensor based on surface plasmon resonance spectroscopy**  
 Author(s): Niggemann, M.; Katerkamp, A.; Pellmann, M.; Bolsmann, P.;  
 Reinbold, J.; Cammann, K.  
 Author Affiliation: Inst. fur Chemo- und Biosensorik, Munster, Germany  
 Journal: Sensors and Actuators B (Chemical) Conference Title: Sens.  
 Actuators B, Chem. (Switzerland) vol.B34, no.1-3 p.328-33  
 Publisher: Elsevier,  
 Publication Date: Aug. 1996 Country of Publication: Switzerland  
 CODEN: SABCEB ISSN: 0925-4005  
 SICI: 0925-4005(199608)B34:1/3L:328:RSTW;1-I  
 Material Identity Number: N867-96009  
 U.S. Copyright Clearance Center Code: 0925-4005/96/\$15.00  
 Conference Title: International Solid-State Sensors and Actuators  
 Conference - TRANSDUCERS '95  
 Conference Date: 25-29 June 1995 Conference Location: Stockholm,  
 Sweden  
 Document Number: S0925-4005(96)01844-8  
 Language: English Document Type: Conference Paper (PA); Journal Paper  
 (JP)  
 Treatment: Practical (P); Experimental (X)  
 Abstract: A miniaturized fibre optical sensor based on surface plasmon  
 resonance spectroscopy is investigated in view of the detection of organic  
 solvent vapours, particularly tetrachloroethene. Surface plasmons are  
 excited on a silver coated multimode fibre by polychromatic light, and the

resonant excitation is detected as a resonant absorption band in the measured output **\*\*spectrum\*\***. When the **\*\*analyte\*\*** is absorbed in a thin gas-sensitive polysiloxane film deposited on the silver layer the polymer film changes its thickness and its refractive index. These changes result in a wavelength shift of the resonant curve depending on the analyte gas concentration. Theoretical considerations about the sensing effect are made and resonance curves were computer-simulated. Based on these simulations the layout of all sensor parameters was optimized. The sensor shows an excellent response to tetrachloroethene with a response time of two seconds and high reproducibility. When using self-assembling monolayers on the silver surface a long-term stability of more than 3 months can be obtained. Very low cross sensitivities of less than 1% to other solvent vapours like acetone and ethanol are obtained, furthermore, the influence of humidity is very low. This miniaturized fibre optical sensor in combination with an easy-to-handle and non-sophisticated measuring and evaluation unit is excellently suitable for the remote sensing of special organic solvent vapours. (10 Refs)

Subfile: A B

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